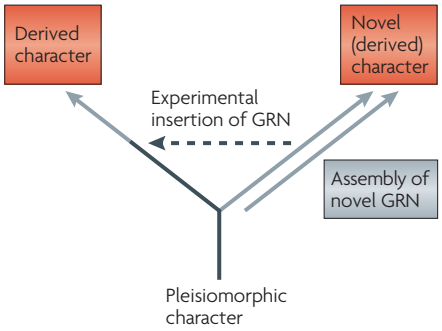
In format provided by Erwin *et al.* (FEBRUARY 2009)



S1 | Synthetic Experimental Evolution. Synthetic experimental evolution involves the insertion of a modified developmental gene regulatory network (GRN) into the developing embryo of a taxon with the ancestral form of a trait (shown in black), converting the trait to the derived state (red). This requires the availability of related living species with derived and ancestral characters, knowledge of the structure of the developmental GRN controlling the character, and the availability of an appropriate system for transferring the GRN. The figure omits change within the uppermost domains of the GRN (see FIG. 1C in the main article), which is occupied by highly conserved regulatory kernels.